

Claims

- [c1] 1. An electrical package comprising:
a multi-layer interconnection structure having a top surface, a bottom surface and an inner circuit therein,
wherein the inner circuit has a plurality of bonding pads on the bottom surface of the multi-layer interconnection structure;
at least an electronic device positioned on the top surface of the multi-layer interconnection structure and electrically connected to the inner circuit of the multi-layer interconnection structure; and
a support substrate made from a conductive material,
wherein the support substrate is positioned on the bottom surface of the multi-layer interconnection structure,
and the support substrate has a plurality of first openings that exposes one of the corresponding bonding pads.
- [c2] 2. The electrical package of claim 1, wherein the package further comprises an isolation layer made from an insulation material such that the isolation layer is disposed between the multi-layer interconnection structure and the support substrate and that the isolation layer has a

plurality of second openings that exposes one of the corresponding bonding pads.

- [c3] 3. The electrical package of claim 1, wherein each bonding pad has a barrier layer thereon such that the barrier layer is exposed by the first opening.
- [c4] 4. The electrical package of claim 1, wherein the electronic device comprises a die, a passive component or an electrical package.
- [c5] 5. The electrical package of claim 1, wherein material constituting the support substrate comprises a metallic material or an alloy.
- [c6] 6. The electrical package of claim 1, wherein the package further comprises a plurality of contacts connected to various bonding pads through corresponding first openings.
- [c7] 7. The electrical package of claim 6, wherein the contacts are configured as solder balls, pins or electrode blocks.
- [c8] 8. The electrical package of claim 6, wherein at least one of the contacts completely fills the first opening so that the contact is electrically connected to the support substrate.
- [c9] 9. The electrical package of claim 1, wherein the package

further comprises at least an insulation layer disposed over a sidewall of at least one of the first openings.

[c10] 10. The electrical package of claim 1, the package further comprises a solder mask layer disposed over a sidewall of at least one of the first openings.

[c11] 11. The electrical package of claim 1, wherein the electronic device is electrically connected to the inner circuit within the multi-layer interconnection structure through flip-chip bonding, wire-bonding or a thermal pressure bonding.

[c12] 12. A method of fabricating an electrical package, comprising the steps of:
providing a support substrate fabricated from a conductive material;
forming a multi-layer interconnection structure over the support substrate, wherein the multi-layer interconnection structure has an inner circuit therein and the inner circuit has a plurality of bonding pads on a surface close to the support substrate;
forming a plurality of first openings on the support substrate, wherein the first openings expose corresponding bonding pads; and
attaching at least an electronic device on a surface of the multi-layer interconnection structure away from the sup-

port substrate, wherein the electronic device is electrically connected to the inner circuit of the multi-layer interconnection structure.

[c13] 13. The method of claim 12, wherein material constituting the support substrate comprises a metallic material or an alloy.

[c14] 14. The method of claim 12, wherein the step of forming the multi-layer interconnection structure further comprises forming a barrier layer between each bonding pad and the support substrate.

[c15] 15. The method of claim 12, wherein the electronic device is a die, a passive component or an electrical package.

[c16] 16. The method of claim 12, wherein after forming first openings on the support substrate, further comprises forming contacts over the contacts such that the bonding pads are positioned inside the respective first openings of the support substrate.

[c17] 17. The method of claim 16, wherein the contacts are configured into solder balls, pins or electrode blocks.

[c18] 18. The method of claim 16, wherein at least one of the contacts completely fills a corresponding first opening

so that the contact is electrically connected to the support substrate.

[c19] 19. The method of claim 16, wherein after forming first openings on the support substrate, further comprises forming at least an insulation layer over the interior wall of the openings and then forming contacts that completely fill the openings so that the contacts are electrically isolated from the support substrate via the insulation layers.

[c20] 20. The method of claim 12, wherein before forming the multi-layer interconnection structure over the support substrate, further comprises forming an isolating layer over the support substrate so that the multi-layer interconnection structure are ultimately formed over the isolating layer and then forming a plurality of second openings over the isolating layer with the second openings linked to a corresponding first opening for exposing corresponding bonding pads.

[c21] 21. The method of claim 12, wherein the step of attaching an electronic device to the surface of the multi-layer interconnection structure away from the support substrate and connecting the electronic device to the inner circuit comprises flip-chip bonding, wire bonding or thermal pressure bonding.

- [c22] 22. An electrical package substrate comprising:
a support substrate made from a conductive material,
and has a plurality of first openings; and
a multi-layer interconnection structure having a top surface, a bottom surface and an inner circuit therein,
wherein the support substrate is positioned on the bottom surface of the multi-layer interconnection structure,
the inner circuit has a plurality of bonding pads on the bottom surface of the multi-layer interconnection structure, and the first openings of the support substrate exposes one of the corresponding bonding pads.
- [c23] 23. The electrical package substrate of claim 22, wherein the substrate further comprises an isolation layer made from an insulation material such that the isolation layer is disposed between the multi-layer interconnection structure and the support substrate and that the isolation layer has a plurality of second openings that exposes one of the corresponding bonding pads.
- [c24] 24. The electrical package substrate of claim 22, wherein each bonding pad has a barrier layer thereon such that the barrier layer is exposed by the first opening.
- [c25] 25. The electrical package substrate of claim 22, wherein material constituting the support substrate comprises a

metallic material or an alloy.

- [c26] 26. The electrical package substrate of claim 22, wherein the substrate further comprises a plurality of contacts connected to various bonding pads through corresponding first openings.
- [c27] 27. The electrical package substrate of claim 26, wherein the contacts are configured as solder balls, pins or electrode blocks.
- [c28] 28. The electrical package substrate of claim 26, wherein at least one of the contacts completely fills the first opening so that the contact is electrically connected to the support substrate.
- [c29] 29. The electrical package substrate of claim 22, the substrate further comprises at least an insulation layer disposed over a sidewall of at least one of the first openings.
- [c30] 30. The electrical package substrate of claim 22, the substrate further comprises a solder mask layer disposed over a sidewall of at least one of the first openings.